

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method of using ionic liquids ~~such as molten salts~~ as solvents in headspace gas chromatography wherein said method comprises dissolving or dispersing a sample in at least one ionic liquid, wherein the ionic liquid is a molten salt and volatilizing the volatile components of the sample.

Claim 2 (currently amended): The method according to claim [[3]] 1 wherein the ionic liquid has a melting point of less than 100°C.

Claim 3 (original): The method according to claim 2 wherein the ionic liquid has a melting point of less than 30°C.

Claim 4 (currently amended): The method according to claim 1 any preceding claim wherein the ionic liquid has a vapor pressure of less than about 1 mm/Hg at 25°C.

Claim 5 (original): The method according to claim 4 wherein the ionic liquid has a vapor pressure of less than about 0.1 mm/Hg at 25°C.

Claim 6 (original): The method according to claim 5 wherein the ionic liquid has essentially no vapor pressure.

Claim 7 (currently amended): The method according to claim 1 any preceding claim wherein the thermal stability of the ionic liquid is [[form]] from 150°C to 400° C.

Claim 8 (original): The method according to claim 7 wherein the thermal stability of the ionic liquid is from 200° C to 300° C.

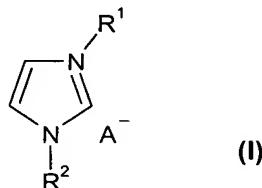
Claim 9 (currently amended): The method according to claim 1 [[or 2]] wherein the ionic liquid has a melting point of less than 250°C, a vapor pressure less than about 1mm/Hg at 25°C and the thermal stability of the ionic liquid is from 150° C to 400° C.

Claim 10: (currently amended): The method according to claim 1 any preceding claim wherein the anion of the ionic liquid is selected from the group consisting of Cl⁻, Br⁻, NO₂⁻, NO₃⁻, AlCl₄⁻, BF₄⁻, PF₆⁻, CF₃COO⁻, CF₃SO₃⁻, (CF₃SO₂)₂N⁻, OAc⁻, CuCl₃⁻, GaBr₄⁻, GaCl₄⁻, and SbF₆⁻.

Claim 11 (currently amended): The method according to claim 1 any preceding claim wherein the cation of the ionic liquid is selected from the group consisting of pyridinium, ammonium, imidazolium, phosphonium, and sulphonium.

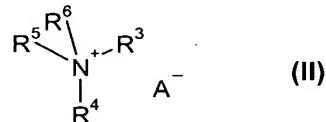
Claim 12 (currently amended): The method according to claim 1 any preceding claim wherein the ionic liquid is selected from the group consisting of an imidazolium salt, pyridinium salt, ammonium salt, phosphonium salt, and sulphonium salt, and mixtures thereof.

Claim 13 (original): The method according to claim 12 wherein the imidazolium salt has formula (I)



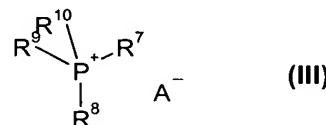
wherein R¹ and R² are independently selected from the group consisting of a C₁-C₁₈ aliphatic group and a C₄-C₁₈ aromatic group; and A⁻ is an anion.

Claim 14 (original): The method according to claim 12 wherein the ammonium salt has formula (II)



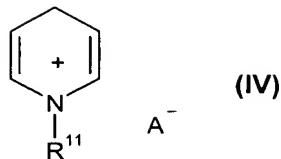
wherein R³, R⁴, R⁵ and R⁶ are independently selected from the group consisting of a C₁-C₁₈ aliphatic group and a C₄-C₁₈ aromatic group; and A⁻ is an anion.

Claim 15 (original): The method according to claim 12 wherein the phosphonium salt has formula (III)



wherein R⁷, R⁸, R⁹, and R¹⁰ are independently selected from the group consisting of a C₁-C₁₈ aliphatic group and a C₄-C₁₈ aromatic group; and A⁻ is an anion.

Claim 16 (original): The method according to claim 12 wherein the pyridinium salt has formula (IV)



wherein R¹¹ is selected from the group consisting of a C₁-C₁₈ aliphatic group and a C₄-C₁₈ aromatic group; and A⁻ is an anion.

Claim 17 (currently amended): The method according to claim 1 any preceding claim wherein the ionic liquid is selected from the group consisting of 1-butyl-3-methylimidazolium hexafluorophosphate, 1-hexyl-3-methylimidazolium hexafluorophosphate, 1-octyl-3-methylimidazolium hexafluorophosphate, 1-decyl-3-methylimidazolium hexafluorophosphate, 1-dodecyl-3-methylimidazolium hexafluorophosphate, 1-ethyl-3-methylimidazolium bis((trifluoromethyl)sulphonyl)amide, 1-hexyl-3-methylimidazolium bis((trifluoromethyl)sulphonyl)amide, 1-hexylpyridinium tetrafluoroborate, 1-octylpyridinium tetrafluoroborate, 1-butyl-3-methylimidazolium tetrafluoroborate, 1-methyl-3-ethyl imidazolium chloride, 1-methy-3-ethyl imidazolium chloride, 1-ethyl-3-butyl imidazolium chloride, 1-methyl-3-butyl imidazolium chloride 1-methy-3-butyl imidazolium bromide, 1-methyl-3-butyl imidazolium bromide, 1-methyl-3-propyl imidazolium chloride, 1-methyl-3-hexyl imidazolium chloride; 1-methyl-3-octyl imidazolium chloride, 1-methyl-3-decyl imidazolium chloride, 1-methyl-3-dodecyl imidazolium chloride, 1-methyl-3-hexadecyl imidazolium chloride, 1-methyl-3-octadecyl imidazolium chloride; 1-methy-3-hexyl imidazolium chloride; 1-methy-3-octyl imidazolium chloride, 1-methy-3-decyl imidazolium chloride, 1-methy-3-dodecyl imidazolium chloride, 1-methy-3-hexadecyl imidazolium chloride, 1-methy-3-octadecyl imidazolium chloride, 1-methy-3-octadecyl imidazolium chloride, ethyl pyridinium bromide, ethyl pyridinium chloride, ethylene pyridinium dibromide, ethylene pyridinium dichloride, butyl pyridinium chloride, benzyl pyridinium bromide, and mixtures thereof.

Claim 18 (original): The method according to claim 17 wherein the ionic liquid is selected from the group consisting of 1-octyl-3-methyl-imidazolium hexafluorophosphate, 1-hexyl-3-methylimidazolium hexafluorophosphate, 1-butyl-3-methyl-imidazolium hexafluorophosphate, 1-butyl-3-methyl-imidazolium tetrafluoroborate, 1-butyl-3-methyl-imidazolium trifluoromethanesulfonate, 1-ethyl-3-methyl-imidazolium trifluoromethanesulfonate, and 1-ethyl-3-methyl-imidazolium bis-(trifluoromethanesulfonyl)-amide.

Claim 19 (currently amended): The method according to any preceding claim A method to detect volatile components in a sample by headspace gas chromatography, wherein said

method comprises dissolving or dispersing a sample in at least one ionic, wherein the ionic liquid is a molten salt and volatilizing the volatile components of the sample.

Claim 20 (currently amended): ~~The method according to any preceding claim A method~~ to identify volatile components in a sample by headspace gas chromatography, wherein said method comprises dissolving or dispersing a sample in at least one ionic, wherein the ionic liquid is a molten salt and volatilizing the volatile components of the sample.

Claim 21 (currently amended): ~~The method according to any preceding claim A method~~ to quantify volatile components in a sample by headspace gas chromatography, wherein said method comprises dissolving or dispersing a sample in at least one ionic liquid, wherein the ionic liquid is a molten salt and volatilizing the volatile components of the sample.

Claim 22 (currently amended): The method according to claim 1 ~~any preceding claim~~ wherein the sample is a pharmaceutical compound.

Claim 23 (currently amended): ~~The method according to any preceding claim A method~~ to detect impurities in a pharmaceutical compound by headspace gas chromatography, wherein said method comprises dissolving or dispersing a pharmaceutical compound in at least one ionic liquid, wherein the ionic liquid is a molten salt and volatilizing the volatile components of the pharmaceutical compound.